

Message Text

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E.O. 11652: GDS

TAGS: ETEL, NATO

SUBJECT: HIGH SPEED CRYPTO EQUIPMENT FOR NATO

REF: A) USNATO 3617 DTG 080944Z JUL 75

B) DG NICSMA 041335Z JUL 75

1. US NATIONAL HIGH-SPEED CRYPTOGRAPHIC EQUIPMENT HAS
US STANDARD NRZ INTERFACE COMPATIBLE WITH BALANCED LOW
LEVEL DIGITAL INTERFACE REQUIREMENTS OF MIL-STD-186-100.
TO INCORPORATE BOTH BIPOLAR AND NRZ INTERFACE SPECI-
FICATIONS AS A REQUIREMENT WILL INCREASE BOTH EQUIPMENT
COST AND COMPLEXITY. NRZ SIGNAL PROVIDES BETTER PERFORM-
ANCE IN PRESENCE OF NOISE THAN BIPOLAR SINCE THREE STATES
MUST BE DETECTED IN BIPOLAR FORMAT AS OPPOSED TO TWO
STATES IN NRZ. CONVERSION OF NRZ INTERFACE SIGNALS
WITHIN THE KEY GENERATOR TO A BIPOLAR CODE IS UNNECESSARY
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AND COSTLY. DUAL CAPABILITY WILL COST AN APPROXIMATE
ADDITIONAL 2,000 DOLLARS IF IT IS DONE INTERNAL TO THE
EQUIPMENT AND ABOUT 3,000 DOLLARS FOR A PLUG-IN MODULE
CAPABILITY. SINCE BOTH RED AND BLACK SIDES OF EQUIPMENT

INTERFACE MUST BE CONVERTED FROM NRZ TO BIPOLAR, TYPICAL PROBLEMS OF COMPROMISING EMANATIONS MUST BE CONSIDERED IN THE DESIGN INCLUDING COSTLY FILTERED AND REGULATED RED

POWER.

2. WE WILL CONTINUE TO RECOMMEND NRZ INTERFACE FOR NATO HI SPEED EQUIPMENT. IF IT BECOMES NECESSARY TO INTER-FACE TO A BIPOLAR CODE FORMAT, THE CONVERSION SHOULD BE DONE IN A SEPARATE EQUIPMENT (MODEM). THE REQUIREMENT FOR THIS CONVERSION CAN BE HELD TO A MINIMUM BY SPECIFYING A DIGITAL NRZ INTERFACE FOR THE MULTIPLEX AND OTHER EQUIPMENT WHICH MUST INTERFACE WITH HI SPEED EQUIPMENT. THUS THE COST OF KEY GENERATOR IS NOT INCREASED AND TOTAL COST OF THE SYSTEM IS ONLY INCREASED IN THOSE CASES WHERE IT IS NECESSARY TO INTERFACE AN EQUIPMENT WITH A BIPOLAR CODE FORMAT.

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